Yes, G-CAN! Endorsing Food Security With Gender-Responsive and Climate-Resilient Agriculture

Presentation Audio Transcript

November 10, 2016

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Julie MacCartee: Good morning, afternoon, and evening, everyone. On behalf of the Agrilinks team, I'd like to welcome you to this special webinar to discuss how the Feed the Future Gender-Sensitive Climate-Smart Agriculture for Nutrition Initiative – it's quite a mouthful, but it's also called G-CAN – aims to support USAID on the new Global Food Security Strategy. Our exciting lineup of speakers is looking forward to sharing a draft framework for integrating gender and nutrition into climate-smart agriculture decision-making and to asking for your feedback on the framework.

Before we get started with the content, I'd like to provide a few reminders. Agrilinks seminars are a product of the USAID Bureau for Food Security and are implemented by the Knowledge-Driven Agricultural Development Project. My name is Julie MacCartee, and I'm a knowledge management specialist with the USAID Bureau for Food Security, and I'll be facilitating the webinar today. So you'll see my name in the chat box and hear my voice during the Q and A session after the presentations.

The chat box is your main way to communicate today, and thank you to everyone who has already introduced yourselves. It's always really fun to see that we've got a global audience for these webinars. Throughout the webinar, we encourage you to use the chat box to share links and resources, and to ask questions and give comments throughout the presentations. We'll be collecting your questions for the presenters and asking them after the presentation, so please submit them at any time.

Next, today's presentation is actually available to download right now on the Agrilinks event page for this webinar, and also in the file downloads box you see on the left-hand side of your screen. So you can download that on Agrilinks or just right there in the webinar screen right now. There will be some detailed slides today, some pretty detailed frameworks that you'll see, so if you want to see the presentation PowerPoint larger on your screen, you can kind of hover over that main presentation box. You'll see four little arrows on the top-right of that box pointing out outwards. You can go into full-screen mode if you'd like to see everything larger or get the chat box off your screen. I'll remind you of that in the chat box later as well.

We are recording this webinar and we'll post the recording, transcript, and other resources to Agrilinks within two weeks. And if you're watching the webinar right now, that means you're already on the e-mail list to receive a link to the recording, so you'll get that in your e-mail inbox. All right. So let's go ahead and dive into our discussion of gender, nutrition, and climate-smart agriculture.

To give us an introduction to the purpose of today's webinar, I would like to introduce Meredith Soule. Meredith is the technical division chief within the USAID Bureau for Food Security – there she is – within the Bureau for Food Security's Country Strategy and Implementation Office. In this role, she provides strategic direction for BFS investments in nutrition, gender, climate-smart Ag, and agricultural innovation systems. So I'll go ahead and pass the mic over to Meredith.

Meredith Soule: Thank you, Julie, and good morning, everyone, and welcome. We're so glad to have you joining us today. And I have to say it feels really good to be connecting with our global community of practitioners. So I want to start today by situating this presentation in

the context of the Global Food Security Strategy that was called for in the Global Food Security Act that was passed in July 2016. This new strategy was built on the existing Feed the Future strategy and developed over 10 weeks from July till October 1st by 11 Feed the Future agencies and departments, so Feed the Future includes many departments and agencies beyond USAID, including USDA, State, Peace Corps, and many others.

We held external consultations with key non-governmental and private sector stakeholders, including many of you, and we wanted to reflect learning and analysis over the past year and indeed what we've learned since Feed the Future began. The strategy covers 2017 to 2021, and it's available on FeedtheFuture.gov if you haven't seen it yet. It includes implementation plans for all of the government agencies that joined together in the Feed the Future, and builds on Feed the Future's experience, and reflects changes in the global context since 2009.

The strategy is heavily built around an updated results framework. I hope many of you have already seen this, and if you haven't, it's I think really – what's really important in Feed the Future. The goal is to sustainably reduce global hunger, malnutrition, and poverty; and it's consistent with the current Feed the Future goal plus the elevation of malnutrition into the goal statement, in alignment with SDT2, and the Global Food Security Act. There's also now three mutually reinforcing and interdependent objectives to achieve this goal, two of which are similar and one new one. So we have inclusive ag-led growth, a well-nourished population, and resilience, which has been elevated as a third objective and something that we've really worked a lot on and learned so much about.

So I want to say a little bit about what you'll see in here that's new. Again, we've elevated malnutrition into the goal statement and resilience is a third objective. There's also a much greater focus on holistic – a holistic nutrition approach, including wash; also emphasis on taking a systems approach that prioritizes facilitation and works throughout value change in supporting systems. We're trying to break down silos across sectors and between development and humanitarian assistance, and also recognize different pathways out of poverty, and strengthening the rural-urban linkages.

Natural resource management and climate-smart approaches are also included as a cross-cutting IR, with more attention to fisheries. And there's now a dedicated intermediate result on youth, which is really a new addition and something we're thinking a lot about now. We're also – want to ensure we're thinking more deeply on finance, investment, and financial inclusion. Even with all these new things, we also want to emphasize that we're not dropping many of the areas that were so important and that we're building on.

So continuing areas of focus include focus on high-impact interventions that are evidence-based and will deliver impact at scale; gender equality and female empowerment has a dedicated intermediate result, which commits us to measuring progress against it using the WIA and other measures; a continuing emphasis on country-led and local ownership; and also policy and governance, including greater emphasis on land tenure, which was mentioned multiple times in the Global Food

Security Act. We're also emphasizing capacity building of humans as well as organizations and systems, and our partnerships with governments, private sectors, civil society research, and university community; and of course harnessing the power of research, science, technology, and innovation.

So now turning to G-CAN, the Gender-Responsive and Climate-Resilient Agriculture for Nutrition Project and how that fits in. We know that over the years – recent years there have been a number of frameworks and models developed for thinking about gender and nutrition, or climate-smart agriculture and gender, or nutrition and climate-smart agriculture, but there's not been a lot of thinking yet on how do we integrate all three of these things at the same time. So it's really the goal of this project to ensure, as we're thinking more and more about the impacts of climate and how we do agriculture, that we're also closely integrating what we know about gender and nutrition at the same time, Because we know to reach our goals of reducing hunger, poverty, and nutrition, we have to integrate all of these; and also within the context in which we work, which varies by country.

So we developed this G-CAN project to advance our thinking, and also because we recognize the need to support our field missions and our countries where most of our work goes on with the latest climate science and understanding of potential impacts on agriculture, while also ensuring our climate-smart ag. program is integrating with the latest evidence on gender and nutrition. So in this webinar, our colleagues at IFPRI will present the framework they've been thinking through, including ediwanday workshop in October to further share their ideas and get broader input on this integration concept. So we're really looking forward to your comments and ideas on this.

I'll say there's another slide here that I won't go into, which was on some illustrative activities and outcomes for the Global Food Security Strategy. You can look at that on your own. I'm going to be turning over now to Claudia Ringler, who's with IFPRI and a chief of party for this G-CAN project, and she'll be introducing her team and beginning the presentation. Claudia is a deputy division director of the Environment and Production Technology Division at IFPRI, and she also manages IFPRI's natural resource theme and co-leads the institute's Water Research Program. So I'm going turn it over now to Claudia. Thanks so much.

Claudia Ringler: Yes. Thank you very much, Meredith, for this great introduction to G-Can and what we are trying to achieve. As Meredith has already said, I'm the coordinator of G-CAN and I'm mostly going to introduce the team and let the team lead all of you through the various elements of this new framework that we hope will support this Global Food Security Strategy with evidence-based research, and new data analysis, and visualization across gender, nutrition, and climate change linkages.

So the first person I'd like to introduce to all of you is Tim Thomas. He's going to describe the key climate change trends that have really informed this Global Food Security Strategy. But in addition to giving you some global insights, he'll of course zoom in a little bit at least into one of – one or a few of the countries. Tim leads the Impact Modeling Team, which is a global economic model that looks at food supply, water supply and demand, and specifically impacts of climate change on agriculture, and he is two of his – one of our two climate change whizzes or wizards on G-CAN.

The next speaker is Jessica Fanzo. So she brings in the nutrition perspective into G-CAN. And as you can see from her short bio on the slide, her title is already taking up half of the entire bio, and she told me she has not been seeking this job because of the title, but she is the Bloomberg Distinguished Associate Professor of Global Food and Agriculture Policy and Ethics at the Berman Institute of Bioethics, the Bloomberg School of Public Health, and the School of Advanced International Studies at Johns Hopkins University. She has various nutrition advisory positions, and very importantly, she has for some time worked on and thought about climate change nutrition linkages, which is so important for G-CAN.

Last but not least, Elizabeth Bryan is really the heart and soul of G-CAN. She's a senior research analyst with IFPRI, where she focuses on sustainable agriculture production systems, natural resource management, including various technologies such as small-scale irrigation systems. But she also, and very important for this project, brings a gender lens to all of this work. And now with no further ado, I'll give you a very quick one-slide overview of what G-CAN does so that you get some idea as the various presenters will lead you through climate change, nutrition, and gender content that will feed into this framework that Meredith has mentioned.

So G-CAN basically does four things: the first one is to develop a process or template for Feed the Future-focused countries to basically support this Global Food Security Strategy. As Meredith has said, the focus here is on bringing in climate science and implications for programming, focusing obviously on climate-smart approaches, but going beyond traditional climate-smart approaches to integrate nutrition agenda, which are key objectives and results under this new strategy. The second strand of work is to develop an innovative framework that brings together gender nutrition into the programming on increased resilience and climate-smart agriculture approaches for enhanced decision-making.

The third one is, as Meredith again said, we need evidence-based — more evidence-based decision-making, and Feed the Future countries and missions have specific needs on tailored analysis, on the analysis of existing data, and new data, especially bringing in the climate change perspective into the programming to better program value change, technologies, gender and nutrition-based strategies ideally in a much more integrated session than before.

Finally, as you all know, Feed the Future has from the beginning collected a lot of data. There are a lot of population-based data sets and sources, and there's obviously many other data sources out there, but they have not sufficiently been brought together, and also they haven't been made available to others, to implementers, to mission staff, and obviously to other partners in collaborating countries. And we — our goal is to do — to bring these data more to the open, so to say, and to also help our understanding of the zones of influence, like what matters, what doesn't matter, what has the — what have the past years of Feed the Future research done and shown for better future program planning. So now after this very really two-minute overview of what G-CAN does and can do, I'll hand over to Tim Thomas, who will describe to you the climate change content of G-CAN. Thank you.

Timothy Thomas: Thanks for the introduction, Claudia, and hello to everybody, and thank you for attending this seminar. I have a lot of slides to cover, so I'm gonna just kinda cover them briefly, but I wanted to begin with just talking about climate. And climate is a medium to long-term pattern of weather, and it usually involves the temperature or precipitation variable, and it can include averages, variability, and timing. So in this map, what we see is the mean daily maximum monthly temperature for the warmest months, and the reason I wanted to show you this is because this is generally a critical variable, because this generally occurs in the growing season and it often forms a constraint on crop productivity.

So for example, in a study I did on maize yields, if this number goes above 28 degrees Celsius, then maize yields begin to decline. So you can see here in this picture any of the yellows and reds are just at the 28 or past, and so with climate change with some warming, you can tell that there'll be significant drop-offs from – as a result of climate change and warming. And this I just wanted to briefly show is a rainfall distribution map.

Now the question that often arises is have we experienced climate change yet. I mean I'd say very basically a lot of places have, and what this map shows is – it analyzes the period from 1980 to 2010, and it asks the question has there been a temperature trend in the warmest months of the year. And so if you see an area that's white, it was – there was no trend or at least not a statistically significant trend; whereas if you see another color, there was a statistically significant trend. And the darker the orange or red, the hotter the trend. And if it went in the green range, it actually had a cooling trend.

So you can see that much of Africa, Europe, Central Asia, and Brazil, temperatures in the 1980 to 2010 period had a very significant trend. And some of those places had, say, a three-degree temperature trend and as a – to – in the study I was referring to earlier regarding maize yields, a three-degree Celsius increase means a 25 percent yield reduction. And then I wanted to begin just introducing you to the climate models. Every year – every six years, the Intergovernmental Panel for Climate Change comes out with a brand-new set of models, and the last set came out in 2013 and there were 61 different models. And in most of the global work on agriculture and climate change, we have four models or five models that we use.

And you can see just simply in this picture the geographic and special differences on climate effects, on temperature effects. And you can see that there's differences in models, but what you do at least see also is that all of the models are projecting temperature increases. Then I want to show you the same slide except for precipitation. Now, precipitation's a little more complicated, because what you see in the precipitation maps is that they don't even agree on direction of change. Some – the lower-left, for example, the IPSL model shows that rainfall will increase in the eastern and northern portion of Zambia, whereas most of the other models say it will either stay roughly the same or decrease. And you can see also there's a big drying trend in the bottom-right map.

So we have these conflicting things, and what we try to do is we try to take those and we put them into crop models, and we try to see, well, despite all these differences, is

there any agreement on what the models are telling us. And so we ran the model through the whole world. Here I'll just show you the Zambia outcome. And the gray bar shows you the median result, whereas the dots actually show you the individual climate models. And this – these data points were not done by me, but they were done by the AgMIP GGCMI project, which drew together seven different crop modeling teams to see, one, how similar the crop models performed, and then also to see how results differed across different climate models. GCM is the same as climate model when you see that in the slide there.

Now we did a study a few years ago in Bangladesh. And so in the previous slide, what I showed you was the aggregated results for Zambia, but actually we run this analysis at a pixel level. In the Zambia case, the pixels were half-degree, which is about 50 kilometer; whereas here in this Bangladesh study, they're five-minute, which is about nine or 10 kilometers square. But what we see in this is a – was a very intriguing signing, and it shows the advantage of doing these crop models and the advantage of taking a careful look at locations, and then different types of adaptation countries might take.

So the map on the left shows what will happen between 2000 and 2050 if the flowers continue planting the same type of seeds and the same planting month for their boro rice, which is their winter-irrigated rice. And then the map on the right shows what would happen if farmers shifted their planting dates around substantially. And so by moving forward two to three months in planting dates, you get this actual boost in yields from climate change. And so that seemed like a strange result, so we dug deeper and what we found for Bangladesh was that what happens is right now it's a little bit too cold for farmers in Bangladesh to plant for the rice to thrive. So what happened here is that, with a little warming, it now becomes okay to plant earlier.

And also by planting earlier, the rice misses the really hot months during the growing season, because it can be harvested before the really hot months hit. And here's a map now that I wanted to talk very briefly about for Kenya, and this is for rain-fed maize, what we're seeing here. And the reds are areas where maize is currently grown, but under climate change, by 2050 you will not be able to grow maize there unless something dramatically happens to develop varieties that will handle the higher temperatures. And the blue areas in here are areas that you currently cannot grow maize, but with the warming and a little precipitation change – but it's mostly a warming effect – these are areas that will start being able to be planted in maize.

So this just draws all sorts of questions that we care about, questions like, well, what will happen to the farmers in the red area? What ought to be done? Can policies be established that will help these farmers? And then the blue areas, these are areas that people will find out are okay for maize, and people will likely tend to move into these areas unless there are actions taken to limit their movement. And I'm not here to judge whether this is a good thing or a bad thing, but what I'm here to say is that this could cause environmental problems if it's not properly thought through.

Okay. So next slide I wanted to now talk a little bit about climate-smart agriculture. Now for those of you who don't know, climate-smart agriculture consists of three main pillars: sustainability while increasing agriculture productivity and incomes, and it

includes adaptation and building resilience to climate change, and it includes reducing greenhouse gas emission intensity in the outputs. So the whole idea of climate-smart agriculture continues to evolve. In the beginning it was sort of a farm-level approach where people would think how to help farmers change things, but then it got a little bigger and people started thinking outside the traditional box and started thinking about the landscape realm of things and start thinking about system realm of things.

So this is how things are evolving, and now you can even extend this even further to include things like risk management, institutions, and governance. And then now what we're trying to do in this project here is to extend the ideas even out to gender and nutrition. And then finally I wanted to talk about the different efforts of different governments. And several years ago as a result of one of the cops, the governments of the world purposed to develop INDCs, or intended nationally-determined contributions, to greenhouse gas emissions reduction. And so what we see here is excerpts from Zambia's draft INDC, and you can see that they bring up some very important topics that include agroforestry, and water use sufficiency, and drought-tolerant varieties, and conservation agriculture; on the crop side and the livestock side, improving livestock varieties and changes in feeding patterns. So anyway, I know that that was a very, very fast presentation, but I would like to now turn this over to Jessica.

Jessica Fanzo: Great. Good morning, good afternoon, and good evening everybody. I'm going to present a bit of the information that we're looking at in the context of linkages between climate change and nutrition. I first wanted to start off with a bit of criticism. It's really rare for climate change modeling, scenario-building, and a lot of the climate change research to integrate nutrition, and I'm gonna talk about five key points and then how do we then start addressing nutrition in the context of climate change. So the first — we rarely build in nutrition outcome indicators and dietary metrics into climate change modeling, and there's reasons for this. We're limited on indicators that are effectively providing those linkages, and I'll talk about that a bit.

The second: we often — and you'll see a lot of papers where we are looking at the impacts of what we eat, the type of diet we eat, on greenhouse gases, or water footprint, or land use. We often don't — aren't really looking the other way around. What are gonna be the impacts of climates on us — on our diets and accessing nutritious food? There's a little bit of work going on on that, but it's mainly the other way around where we're looking at what are our diets doing to climate change. So we need to start thinking about the reverse. What's climate — how is it gonna change our access to food, the availability of food, and that being more nutritious food?

The third is we need to understand the near-term effects of seasonality, which will have significant influences on nutrition outcomes and access to healthy and diverse diets. We think of climate change as being these very macro changes, but we know that seasons really can impact nutrition outcomes. And those shifting seasons, less predictable seasons, more severe droughts, more severe monsoons will have a big impact, and we need to understand that more and bring seasonality back into the conversation.

Number four: we need to react to rapid changes in food prices and volatility that will be sure to be an issue with climate change, and the impacts — the broader, longer-term impacts of those food prices and volatility on household coping strategies, nutrition,

and social equity. And the fifth is to understand the vulnerability of the entire food system with regards to ensuring healthy diets. So to point one, including nutrition and dietary outcomes, we have some core nutrition indicators. The obvious ones you can think about is stunting, wasting, overweight and obesity. We have some good nutrition indicators.

We could have more things like dietary diversity scores, et cetera, but we need to start thinking more about the entire food system that brings in waste and loss, food safety, resiliency, ecosystem health, and there's a lot of indicators that we can borrow from other sectors and start applying them to the nutrition and diet lens. And this figure I'm showing you is from a paper recently in the Sustainability journal, looking at the variety of metrics that we can borrow from across different disciplines to really get a full picture of a food system and what that would look like in the context of climate change. And a lot of these indicators are out there. There's data for them. We just need to start applying them and using those to better inform policy makers and programmers.

The second is again – we're often looking at the type of diet that we eat and its impacts on climate change. So for example, we know that diets heavy in red meat have bigger impacts on water use, land use, and greenhouse gases as opposed to a vegetarian diet. So we're often looking at the way we eat and its potential impacts, and that in itself is controversial, because changing the way people eat, changing their behavior, things like carbon taxes on high-carbon foods are controversial right now. You get into ethical issues around self liberties, and autonomy, and paternalism, but we often really are not looking the other way around of how climate is going to impact diet. And this is a figure showing you different diets and their change in greenhouse gases, and you can see that meat has a higher impact than, for example, a vegan diet.

The third is the seasonality. We know that seasonality is really, really important for nutrition. Extreme events, including droughts and floods, have impacts on the variability of nutrition status. This is a figure coming out of the Global Nutrition Report in 2015 showing you that there is variability, particularly in issues such as wasting, and we need to start looking at these more carefully and doing real-time surveillance. Seasonality. Seasonality, which climate change will effect, is going to effect food prices and the volatility. And we know that low-income consumers spend a good portion of their income on their diet, and so as food prices are increasing, there's more volatility and less predictability. We then have to start thinking about coping strategies.

So households often – one of the first things that happens since there's a decrease in dietary diversity, then you see reductions in food consumption, and coping strategies, if social protection mechanisms aren't put into place, can become more severe. More difficult choices have to be made, which can result in poor nutrition. And I bring this up, because there is a bit of a worry about food prices and where we're moving. This figure on the left shows you the food price index, and in blue you'll see the two spikes in 2007, 2008, and again in 2010, 2011 that coincides with the Arab Spring. We saw these big food price increases. The green bars show you the food-related protests and riots. So with these food prices and the volatility that they bring, we're seeing more social unrest and this is incredibly worrisome. So in the context of climate change, are

we going to see more of these protests, and riots, and social unrest as we don't have good control over food prices and what that brings?

And this can of course lead to more serious long-term conflicts, and the figure on the right shows you countries of conflict in red – in the red line who have been – so countries who have been effected by major civil wars or conflict, they've seen much less reduction and stunting over time, chronic under-nutrition; whereas countries who have been quite unaffected by civil conflict, shown in green, have seen more rapid reductions and stunting. So conflict clearly has links to improvements in nutrition, but the underlying context of that could be complicated and multifaceted, but food prices it seems does play into that.

And the most important thing and where we can really act is the vulnerability of the food system. This is showing you a partial diagram of a food system framework that will be coming out in the UN high-level panel of experts Food Systems and Nutrition Report next year. And we know that food moves through a system. It goes from production, storage, distribution, processing and packaging, and then it hits a market. And then consumers engage with the food system in what we call food environment. This is where consumers make behavior choices and decisions about what kind of food they're going to purchase, what kind of food they're going to acquire. And this influences their diets, not only the type of diet, but the quality, the diversity, and the safety. And this ultimately leads to nutrition and health outcomes.

Now this whole food system is going to be impacted by climate change. The value chain of food moving through the system, the food environment, and consumer behaviors. We have the option and the ability to start looking and unpacking this food system, and seeing where climate change effects will occur, and how do we adapt and mitigate. And this is showing you – this figure, although wordy, shows you the value chain in the middle from inputs to consumption. And we want to ensure that we maximize nutrition entering the value chain at all of these steps and minimize nutrition exiting the value chain.

So – and when we layer climate on top of that, a lot of the work that we're doing in nutrition that we could do in nutrition is climate-smart. So Tim had indicated that climate change is happening, it's not something that will happen in the future, so we need to make short-term decisions about what we do across the food system. We know what to do to make value change more nutrition-sensitive. We've inherently addressed some of the climate issues that we'll deal with as well. So if you look – I hope that people can look at this value chain framework more carefully, because there's a lot of different entry points.

So while I presented the idea that we still have a lot to learn, we need more nutrition integration, more nutrition research into climate change research, we still have a lot of things that we can act on now that would be nutrition and climate smart. I'm just going to end with two slides. So one of the countries of focus for G-CAN is Zambia. Zambia has a big burden of under-nutrition. Stunting is 50 – 40 percent: very high. Anemia in women is very high, almost 30 percent; and there's lots of micronutrient deficiency issues: iodine deficiency in children, iron, Vitamin A, and same with the women of reproductive age, as well as pregnant women.

There's an interesting project that IFPRI and Concern have been working on. It's called the RAIN Project that some of you may know about: Realigning Agriculture to Improve Nutrition. This was looking to reduce the prevalence of stunting in children through an integrated agriculture health and nutrition approach. Most of it was focused on supporting effective agriculture interventions to increase year-round availability and access to nutritious foods. And there's been some great results coming out of this project showing positive associations of increasing production diversity with dietary diversity in young children as well as children 24 to 59 months, and some reductions in stunting.

And one easy entry point, if we start thinking about commodities across the value chain that potentially have a low environment footprint, its fish. Fish is a very interesting – it's very nutritious. It has a much lower environmental footprint than something like promotion of cows or pigs. And we're seeing that fish is commonly consumed in Zambia, so this could be an entry point to try to push on a rich animal source food that can be found in a cost-effective way that has a low environmental footprint. So the question is how do we expand that. How do we expand sustainable agriculture, and improve the access to that, and promote the consumption of small fish for improving nutritional status? So something maybe for a discussion of talking about fish really important – a woman's crop, getting the technology and the knowledge to women to be able to promote this not only for their income, but also for the nutrition and health of themselves and their families. I'll end there and I'll turn it over to Elizabeth.

Elizabeth Bryan: So everyone, thank you so much for joining us today. Thanks for all the other presenters. I'm going to specifically talk a little bit about the linkages between gender and climate change. So Tim sort of gave us a picture of climate change and resilience in climate-smart agriculture, and Jess talked about the important elements that we need to think about with respect to climate and nutrition, and I'm going to bring in the gender lens to all of this. And then at the end, I'm going to pull all these elements together to present the draft framework that we've developed as part of this project, because we really want to get all of your input into these elements and how we present them, and to make sure that we're covering all of the linkages between these three topics.

So why do we care about gender and climate change? Well there's a big body of evidence that shows that men and women have different gender roles within the household and in the community; they have differential access to resources and assets and they also face different constraints in terms of adopting new technologies, or practices, or livelihood strategies; and we also know that they have different preferences for the kinds of strategies and responses that they take in response to climate change; and in general how they spend income and things like that.

So we need to better understand all of these factors in the context of climate change, because they influence the kinds of decisions that men and women take in response to climate change and in response to specific shocks. And these decisions have implications for the kinds of development outcomes that we care about, like nutrition, food security, environmental security, education of children, and things like that. These different factors also can highlight entry points for increasing women's empowerment. So if we can understand their roles better and the constraints that they face, then we

can find these entry points in order to support their empowerment. And we also need to consider all these factors, because they help us understand how the costs and benefits of different agricultural interventions, including climate-smart agricultural interventions, have different implications for men and women in the household, and how the costs and benefits are distributed.

It's important that we think about these things so that interventions do no harm to women and potentially also lead to ways where women can actually benefit and we can have some gender-transformative outcomes as well. And we also want to think about these factors, because we want to increase women's involvement in climate-smart agriculture approaches. So we need to be able to think about what their preferences are so we can have the kinds of technologies, approaches, and strategies that meet their specific needs and services that meet their needs. And we can find those entry points in order to be able to reach them with information so that they can actually adopt these practices.

So just digging into what we know about gender and climate change specifically, there has been a growing body of evidence in this area in particular, but there's still a lot of work that needs to be done. We do have some evidence on the differential impact of climate shocks in particular on men's and women's asset dynamics. So whose assets get sold in response to a shock? And we know that this depends on the kind of shock and also the kinds of roles that men and women have in their livelihood strategies. So we do have some evidence from limited context, but there are lots of other impacts that we might want to think about in terms of how climate change effects men and women differently; and moving beyond looking just at climate shocks, but looking at how longer-term climate stressors effect men and women differently.

And we do have growing evidence that the adaptive capacity of men and women is very different, and I'm going to talk about that a little bit more in the next slide in the context of Zambia. And we also are beginning to look more at how different climate-smart agriculture approaches or just agriculture interventions in general are — the cost benefits of these, how they're distributed across men and women in the same household. But there needs to be more evidence on that as well. And we also need to think more about the linkages in terms of how climate-smart agriculture leads to different well-being outcomes, like nutrition, food security, and women's empowerment; and how bringing women into — having them participate more in climate-smart agricultural approaches can improve those well-being outcomes.

So there is evidence that shows that women spend income differently and things like that, but we need to examine this even more in the context of climate change. And we also need to think about — okay, so we know what the constraints to women's participation might be, but what are the approaches that we can use to effectively reach women to bring them into climate-smart agriculture programs and projects? So what we've identified in terms of looking at gender differences and adaptive capacity is that we find that men and women often have different user characteristics, and these are things like the ways in which they perceive climate change and their human capital that influence the kinds of choices and the ability to make choices in response to climate changes.

We don't have particular information from Zambia on differences in terms of how men and women perceive climate change, but we know from other contexts that there are these kinds of differences. What we do know from Zambia is that women are – tend to be more illiterate than men, so you can see how that might limit the kinds of response options that they have available to them. And we also know that women, and particularly women from female-headed households, are more likely to be poor, which also limits the range of options that they have. We know from many, many contexts that women and men have differential access to information on climate change and information on what are the appropriate responses to take to respond to climate change.

And just one particular example from Zambia is that we know that women are less likely to receive training on conservation agriculture, which has been one of the approaches that's been encouraged as a climate-resilient strategy. We also know that men and women face very different institutional environments. So this is things like their ability to join groups, to speak in public, the kinds of social norms that determine which strategies they're able to take. And so from Zambia, for instance, we can see that the dual system of statutory and customary inheritance laws has – may have some disadvantages for women in terms of their ability to be able to access land, especially married women.

So the statutory laws seem to be able to get female-headed households to begin to own and control more land, but women from married households still have to rely on their husbands in order to access land. And we see that only women control decision-making on about 10 percent of the plots on average on the land of the household. So – and then we have to think about things like social norms and how those determine the range of responses that are available to men and women. So for instance, social norms might inhibit mobility for women, which inhibits their ability to participate in the market, and sell different crops, and gain the income from that.

As Jess said in her presentation, fish might be a very important strategy in Zambia to improve nutritional outcomes, but women's access to aquatic agricultural systems is more limited than men's, so we need to think about how we can get them more involved in the production and in benefiting from the practice itself and not just in – on the consumption side. And I think it's important to remember that the constraints to women's responses to climate change are not only external to the household, but they're also internal to the household. So we know that men and women have to take a series of decisions and – within the household in terms of how and when particular practices or technologies are used, who has access to those technologies, who can – has the right to sell or profit off of the technology as an asset, and who controls the outcomes from the use of that technology.

So who controls the yields and whether they're consumed at home or sold in the market? And who controls the income from the sale of those goods? And so it's important to think about this inter-household bargaining space and whether or not women are able to participate fully into these decisions to ensure that their needs and preferences are being met in terms of the responses that are taken at the household level. And women's ability to influence these decisions, both within the household and

within the larger community, depends on several factors, and these include their – the degree to which preferences and interests align or differ between men and women.

And although we don't have much evidence from Zambia on what are the gendered preferences for responding to climate change and shocks, we find that from other contexts, these factors are very important and they're often very different – that women often have very different preferences for how to respond to climate shocks. So things like their preferences for different crop varieties or types, or different strategies like adopting improved cook stoves, or investing in food storage facilities, they may have a greater need for those types of strategies. We also know that access to resources is important in being able to influence decisions about responding to climate change, and we know that men tend to have more access to credit, land, labor and productive assets, which enable them to have a greater range of adaptive responses.

And we also know that bargaining power is very important, and women often have less bargaining power to influence decisions in the household. And one of the indicators that we often look at and use is the Women's Empowerment in Agriculture Index to see the degree to which women are empowered with respect to men. And what the WEAI results show from Zambia is that gender inequality tends to be very pronounced in access to and decisions on credit, in women's workload being greater than men's, and in women's ability to control assets. In terms of women's ability to influence decisions that are taken at the community or policy level, we see that there is a skewed distribution between women in men in leadership positions in the agricultural and natural resource sectors within Zambia.

And another critical thing, and this is also something that's being incorporated into new versions of the Women's Empowerment in Agriculture Index, is that domestic violence is important in the fact that it limits women's bargaining power within the household. And we find that domestic violence in Zambia is high, and even women and – half of women and one-third of men believe that it's justified under certain conditions. So this is something that needs to change in order to really give women the power to influence decisions that are going to benefit them within the household. And so we do have information on what are the key factors and elements that are important when we think about climate change and gender, and a lot of the evidence that we have is very local and context specific, and we need to build on that evidence base. We also have certain areas where we could really build evidence in terms of the linkages. So we need more evidence on the gender-differentiated impacts of shocks and longer-term climate change impacts on men and women and how those are different. We also need to look more at intersectionality: so different groups of women and how they are affected by climate change and how they are responding to climate change. So this could include married women versus female-headed households, young versus old women, women of different ethnic groups, et cetera.

We also need to think more about what the entry points for increasing women's participation in climate-smart agriculture, both inside and outside the household. And what sorts of information – how we can reach women better with information so that they can participate in these strategies. And another thing we need to think about more about and to build evidence on is how does different climate-smart agriculture approaches – how do these effect men and women and outcomes for men and women.

How are the costs and benefits of different approaches distributed in terms of things like women's time use and men's time use?

And we need to think about how bringing women into this process of climate-smart agriculture can improve food and nutrition security and other outcomes that we care about. And so we believe and what we're doing in this project is trying to develop a framework and some tools based on this framework, and to do research around this framework to try and think about all of these things and identify these research gaps, and also use this framework to guide interactions with the mission and with partners and others so that we can have a discussion around the intersection of all of these things and begin to think about entry points for addressing these challenges together.

And so what we've done is put together this framework based on all of the sorts of different issues that you've heard in the presentations today, in looking at several different frameworks, including frameworks on resilience – the Frankenberger framework on resilience, the Spring Framework on agriculture for nutrition, the IFPRI gender and climate change framework, and the climate change nutrition framework that was developed for the Global Food Policy Report. So we brought all of these frameworks together. We had a workshop on October 13th with our USAID counterparts and many other implementing partners to talk about all of the elements from these frameworks and how they fit together, and how we can bring them together in an integrated fashion.

And then the IFPRI team has now gone back and put together this very rough draft of a framework that integrates what we think are some of the key elements with respect to resilience, climate-smart agriculture, gender, and nutrition. And so I'm just going to walk through these elements briefly here, and then I look forward to following up with those of you who have feedback and comments for us and are interested to help us develop this further. So if you look in the top-left corner of this framework, we have the climate signal, which is the exposure to climate change. And this includes things like short-term climate shocks like droughts, floods; and it also includes long-term climate stressors, things like long-term changes in temperature and rainfall, changes in seasonality and the variability in seasonality, changes in rainfall variability, the incidence of droughts.

And we also wanted to think about what can be done to increase resilience during normal or good-weather years, so we included just sort of normal weather years in this climate signal element. And then the degree to which climate change effects people and systems depends on the context in which it's occurring. And so that's this blue box that surrounds the other elements of this framework, and we call this the enabling and disabling environment for resilience and vulnerability. And so what we start with are these set of initial conditions. So climate change responses are filtered through these initial conditions, and these include things like the ability of people and systems to absorb the shock or the stress and the ability to adapt to that shock or that stress.

And it's important that absorptive and adaptive capacity are going to be different. As I had mentioned earlier, men's and women's, for instance, adaptive capacity depends on many factors, and we know that women's capacity is often constrained. So for example, women would have less access to information and technology, or lower human capital,

or less access to natural resources, and that would then limit the range of options that they have and the decisions that they can take in response to climate change. And we know that, for instance, men and women are involved in different livelihood roles within the household, and so their ability to absorb shocks and absorb climate stressors depends on those roles that they have. And so they may be more or less exposed to the kinds of climate changes that are happening in their context.

And then we move into this what we're calling the decision space, and here is sort of an action arena where different actors – and this includes men and women within households, it includes household responses, community responses, and also all the way up to the sort of state and regional policy responses to climate changes and shocks. And we right now have grouped these response choices in terms of the degree to which they're adaptive or transformative, whether or not they're just sort of normal risk management practices, or coping or survival strategies, which would indicate a more limited range of options for responding to shocks and climate change, or sort of maladaptive responses, but there are many other ways that we can think about sort of categorizing the kinds of responses that men and women in groups and communities have to climate change.

And these responses happen over different timescales. So these could be short-term responses, like changing a planting date or planting a new crop variety; or it could be a more medium-term response, such as agroforestry, or investing in infrastructure, or food storage facilities – things like that that may have longer-term time horizons associated with them. And the ability of different actors and groups to make different responses, as I mentioned previously, depends on the degree to which preferences and priorities align. It depends on their access to resources. It depends on the different kinds of bargaining power that they have in order to effect these kinds of changes.

And then drawing on the agriculture for nutrition framework, we've tried to identify some pathways through which these responses can lead to either greater resilience or greater vulnerability to climate change, and these sort of intermediate outcomes that happen after changes are made. And so these pathways are sort of the income and production pathway so you can think about planting different – more resilient or hardy crop variety might increase income for the household. Or you can think about other kinds of larger-scale strategies, like trade or food storage, which might improve income; or other market-based strategies that improve income at multiple levels.

And you can think about the time-use pathway. So how – if a new strategy could free up time for women, for example, to invest more in caring practices for their children or other kinds of behavioral changes, then that could have positive effects on dietary quality or nutrition. We have to think about the food environment – how changes in the food environment can lead to improved outcomes or worse outcomes. And I'm sorry, but this looks like the – covered up here a little bit in this picture. We have a little bit of [laughs] formatting to do, but there's also this sort of production pathway. As Jess mentioned, in the case of Zambia, production diversity was shown to lead to improvements in dietary diversity as well, so there is a potential for the production pathway to lead to improved outcomes.

And then in terms of these intermediate outcomes, these are things like improved food security or greater food insecurity, depending on the degree to which people are able

to respond to the challenges that they're facing. It could be either greater nutrition, adequate nutrition, or inadequate nutrition, and the unavailability of good quality foods. And these all – the other outcomes relate to environmental degradation or security. Importantly, we have a bar that links these outcomes back to the climate signal, because as part of this environmental outcome, we have to think about what is the mitigation potential or what are the degree to which emissions are increasing. And we also want to think about women's empowerment as an outcome in itself, because it's important to think about gender not just in the ways in which we can improve other outcomes, but in thinking about improving women's status as an outcome in itself.

And then these sort of intermediate outcomes feed back into the initial conditions that households and communities face in the future to other climate shocks and stresses that are happening. And so I'm going to go ahead and stop here, and I really look forward to getting your feedback on this framework and thinking about other elements that we might be wanting to include here. So thank you very much.

Claudia Ringler: Yeah. Thank you. And we are coming to the end of the presentation, and as you have heard so much – there's so much content and details, and – including some details on Zambia. And the reason for that actually is that we just went there and spent a few days with the mission there, and so we did some reviews for them. But to summarize a few things that we want all of you to take away from this morning's presentation is first, we do have this new Global Food Security Strategy and it requires us to strengthen climate resilience in all Feed the Future activities.

Next, I hope that – I mean you have seen but you already knew before that we need and we can act on climate change. Climate models do show very consistent warming trends, and they do allow us to assess the impact on productivity, and there is reasonable agreement in results. Third, also as some of the comments that we have seen in the chat box is that – the third comment is heterogeneity matters. You've seen it at some of the climate impacts, but also I think some of the messages from nutrition and gender were very clear.

There's spatial heterogeneity. There are differences in people living in highlands and lowlands. And as a result, we all have winners and losers from climate change. So there are those opportunities and there's a lot of threats and losses, and we have to act accordingly. On climate-smart approaches that are now really – a lot of people are talking about them, so the understanding overall is clear. I think we all believe we understand more or less what climate-smart approaches are, but we don't at this point understand sufficiently how gender and nutrition are linked to that. What are the changes in nutritional outcomes? What we really need to do, as Jess has demonstrated, is to increase both climate-smart nutrition and women's empowerment along the entire value chain. We may have seen some checkbox mentionings where people say things went very well until the business became too profitable and men took over again.

The fifth point is policy alignment. Gender and nutrition-centered climate-smart approaches need to be not only cognizant of local indigenous knowledge, but they also need support at national and at the global level. So we need some kind of – we can't have disjointed activities, because otherwise the local ones will not be recognized at the larger level. The vulnerability context really matters, the absorptive and adaptive

capacity. It's very important to include safety nets and specific support for the most vulnerable – those who are being left behind from the impact of climate change.

And finally I saw that there were several questions on metrics. We still need to improve our metrics systems to better measure changes across the climate change, nutrition, gender nexus. And with that, we conclude the presentation, and we're very happy to go into answering questions – all of the questions that you have posed in the chat box. I'm not sure if the moderator would first say a few words about that or if we should jump right into that.

[End of Audio]